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Notes on raptor migration in western Tanzania

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The migratory patterns of birds of prey across the African continent are poorly known compared to migrations of raptors in Europe and North America. Although it is well documented that a number of species use routes taking them to and from Europe or North Africa to southern Africa along the East African rift valleys (Brown & Amadon 1968, Britton 1980), details and estimates of numbers are lacking. Additionally, western Tanzania has received less attention from ornithologists and birders than other parts of the country, mainly because most birders have concentrated their attention on the larger game parks in the northern and eastern interior. Bird species diversity for Gombe National Park is at least 230 species (Stanford & Msuya, unpublished). The lack of attention to western Tanzania is unfortunate, since a number of central African species apparently occur only on the eastern shore of Lake Tanganyika (Short *et al.* 1990). The two national parks located on the shore of the lake, Gombe National Park and Mahale Mountains National Park, are known more for their non-human primate fauna than for birds, yet both parks lie along the western rift migration route used by a number of raptor species and may provide new information on migratory patterns for this part of East Africa.

This paper reports on observations of the passage of birds of prey along the eastern shore of Lake Tanganyika, primarily in and around Gombe National Park. These observations were made as a supplement to a study of the predation ecology of Red Colobus Monkeys *Procolobus badius tephrosceles* and Chimpanzees *Pan troglodytes schweinfurthii* at Gombe (Stanford *et al.* unpublished); raptor sightings were documented because, other than Chimpanzees, large raptors may be the most important predators on immature red colobus at Gombe. Additionally, observations of migratory flights were made during a visit to the Mahale Mountains, 160 km south of Gombe along the lakeshore.

Study area and methods

The study site is a 45-km^2 national park bordering Lake Tanganyika, composed of steep valleys containing riverine woodland, with *miombo* woodland higher on the valley slopes. Gombe National Park and its fauna have been described in detail elsewhere (Goodall 1986). During 1991 and 1992, regular censuses were conducted during the raptor migration season as birds passed southward along the western rift that forms the eastern border of the national park (elevation 1750 m). Sightings were made on an *ad libitum* basis in the course of nearly every day in the field between 1 September and 15 November. Two main points in the park were used for watching the skies for raptors: the "Peak," a point of land near the lake edge on a ridge separating Kakombe and Kasakela valleys from where a panoramic view afforded excellent close

sightings of raptors and other birds passing along the lake, the shore area and the lower valley. Additionally, several times each year day-long censuses were made from the rift itself, at approximately 1600 m elevation at the head of Kakombe valley. The number and diversity of species sighted varied between these sites depending on daily wind conditions. In addition, in the course of wildlife research in the forest at Gombe, records were kept of sightings of all raptors as part of a field study of the ecology of Red Colobus Monkeys and their major predators. Although field identification of species was not always possible, daily observation throughout the study periods make it likely that the data on raptor flights were representative of the relative abundance of different species at different points in the season.

Results and Discussion

On a given day, a number of large and small raptor species were sighted; this paper is concerned mainly with those that appeared to be passing through on migration. Strong easterly winds invariably produced the largest flights, and appeared to concentrate migrants along the lakeshore, while on calm days raptors appeared more widely dispersed and were typically seen at much greater heights over the higher sections of the rift and beyond to the east. Of the migrants, there were four main species; Wahlberg's Eagle *Hieraaetus wahlbergi*, Tawny Eagle *Aquila rapax*, Common Buzzard *Buteo buteo*, and Northern Hobby *Falco subbuteo*. Other raptors, such as Martial Eagle *Hieraaetus bellicosus*, and Crowned Eagle *Spizaetus coronatus*,were resident in the park and were frequently observed; these species, however, are not known to be migrants (Britton 1980). Only the four species above were rarely sighted outside the migration but were common during these months. A full list of raptor species known to occur in the park is included in Table 1 (taken from Stanford and Msuya, unpublished). Black Kites of two subspecies, *Milvus migrans migrans* and *M. m. parasitus*, were present, although *parasitus* occurred predominantly in September and so may have been a migrant.

Table 1. *Raptors recorded in Gombe National Park*
Nomenclature follows Short *et al.* 1990

Palm-nut Vulture	*Gypohierax angolensis*
African White-backed Vulture	*Gyps africanus*
Augur Buzzard	*Buteo augur*
Common Buzzard	*B. buteo*
Black Kite	*Milvus migrans migrans*
Black Kite (yellow-billed race)	*M. m. parasitus*
Gabar Goshawk	*Micronisus gabar*
Lizard-buzzard	*Kaupifalco monogrammicus*
African Harrier-hawk	*Polyboroides radiatus*

Black-shouldered Kite	*Elanus caeruleus*
Osprey	*Pandion haliaetus*
Bateleur	*Terathopius ecaudatus*
Verreaux's Eagle	*Aquila verreauxi*
Tawny Eagle (includes "Steppe Eagle")	*A. rapax/nipalensis*
Wahlberg's Eagle	*Hieraaetus wahlbergi*
African Hawk-eagle	*H. spilogaster*
Martial Eagle	*H. bellicosus*
Long-crested Eagle	*Spizaetus occipitalis*
Crowned Hawk Eagle	*S. coronatus*
African Fish-eagle	*Haliaeetus vocifer*
African Little Sparrowhawk	*Accipiter minullus*
African Goshawk	*A. tachiro*
Montagu's Harrier	*Circus pygargus*
Bat-hawk	*Machaeramphus alcinus*
Northern Hobby	*Falco subbuteo*
Peregrine (Falcon)	*F. peregrinus*
Common Kestrel	*F. tinnunculus*
African Pygmy Falcon	*Polihierax semitorquatus*

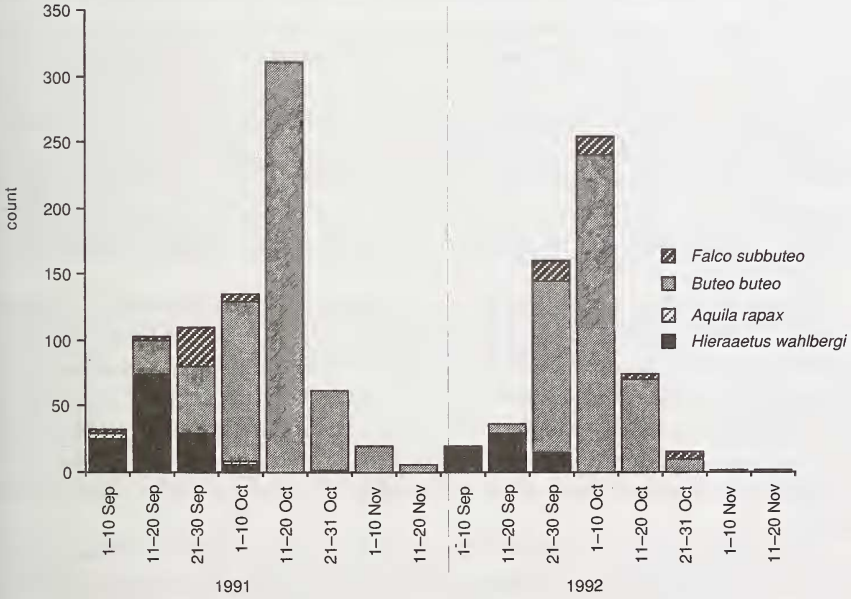

Figure 1. *Numbers of four migratory species of raptor passing south through Gombe National Park in 1991 and 1992*

Figure 1 shows the monthly variation in occurrence of four migrant raptor species; each bar represents one-third of a month. Common Buzzards composed the majority of migrants sighted. In both 1991 and 1992 their flights were concentrated in late September through mid-October. On days with ideal weather, impressive flights occurred. On both 30 September and 2 October 1992, for example, buzzards passed over Kakombe valley for several hours each day at average rates of more than one bird per minute. A large proportion were in immature plumage. Wahlberg's Eagle was the other frequently observed migrant, though in much smaller numbers than Common Buzzard. Wahlberg's Eagles peaked in numbers in mid-September and were not seen after 1 October in either year. Small numbers of Tawny Eagles were seen, and were suspected to be migrants because they were rarely sighted outside September and October. Northern Hobbies were observed along the lakeshore, mainly at dusk, passing southward singly and in pairs in late September. Individuals of this species also remain in Gombe throughout the northern winter, and are found mainly at higher elevations in *miombo* and over open grassy areas.

At various times during the two sampling periods large flights of other birds appeared also. In early and mid-September, for example, flights of Eurasian Swifts *Apus apus*, passed through Gombe, and in early October flights of Eurasian Bee-eaters *Merops apiaster*, Western House-martins *Delichon urbica*, and Barn Swallows *Hirundo rustica*, were seen daily.

The largest flight of migrant raptors observed during the study period was not observed at Gombe. During a 12-day visit to Mahale Mountains National park, 160 km south of Gombe on the Lake Tanganyika shoreline, large flights of European Buzzards were seen on 21 and 22 October 1991. From a ridge just west of the rift, a flight of more than two birds per minute was seen for approximately 3 h each day, totalling at least 800 buzzards during the sampling period alone. Intermittently heavy rain on both days probably prevented what would have been an even larger flight. All birds sighted were of this species, and the route taken was southward along the lakeshore, turning southeastward and appearing to cross the rift to the south and east of the Mahale research camp at Kasoge. This route, if continued, would take the flights toward northern Zambia.

Factors other than wind conditions also influenced the appearance of migrant raptors. In late October and early November 1991, large flights of the reproductive (alate) stage of a species of termite (probably *Macrotermes* spp.) produced large concentrations of Black Kites and Common Buzzards which captured the alates in large numbers on the wing and circled for hours feasting. These birds presumably had been en route southward over the lake or higher over the rift, but concentrated themselves over a small strip of Gombe in order to exploit this easily captured food source.

The uncertain status of migrant African birds of prey is further confused by the tendency for some species to be both residents and intercontinental migrants (Brown *et al.* 1982, Short *et al.* 1990). It appeared that Black Kites of the nominate subspecies were year-round residents along the Gombe lakeshore, while the yellow-billed race

parasitus occurred only as a migrant. The origin of Common Buzzards passing through Gombe, however, is more likely to be Europe and northern Asia rather than Palaearctic (northern) Africa (Brown *et al.* 1982). Western Tanzanian resident and migrant avifauna have been largely ignored, even though Gombe and Mahale lie along a major migration route. Further data from this region may help to resolve the status and flight paths of migrant African raptors.

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